CLAIM LISTING

Claims 1 through 56. (Canceled).

57. (Previously presented) A method of rendering a substrate catalytic to electroless metal deposition comprising the steps of: (a) depositing a ligating chemical agent on said substrate, which is capable of both binding to said substrate and ligating to an electroless plating catalyst; and (b) ligating said electroless plating catalyst to said ligating chemical agent,

wherein said ligating chemical agent is a bifunctional molecular species of the form $R_7R_8P(CH_2)_nPO_3R_9R_{10}$, wherein n is between 1 and 20, and wherein R_7 and R_8 are substituted or unsubstituted alkyl groups, substituted or unsubstituted aryl groups, or substituted or unsubstituted heterocyclic groups, and may be the same or different, and wherein R_9 and R_{10} are hydrogen atoms.

58. (Previously presented) The method of claim 57, further comprising, after step (a), the step of contacting said substrate with a chemical reagent capable of reacting with at least one functional group of said ligating chemical agent.

59. (Previously presented) The method of claim 57, wherein said substrate is selected from the group consisting of: silicon oxide, titanium oxide, zirconium oxide, indium tin oxide, indium zinc oxide, tin oxide, zinc oxide, copper oxide,

aluminum oxide, nickel oxide, and combinations thereof.

60. (Previously presented) The method of claim 57, wherein said substrate comprises a polymer with surface hydroxyl groups.

61. (Previously presented) The method of claim 57, wherein said electroless plating catalyst is a palladium catalyst.

62. (Previously presented) The method of claim 57, wherein said electroless plating catalyst is a palladium-tin colloid.

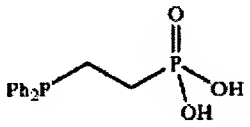
63. (Previously presented) The method of claim 57, wherein said electroless plating catalyst is selected to deposit metals from the group consisting of: cobalt, nickel, copper, gold, platinum, palladium, silver, and alloys thereof.

64. (Previously presented) An article of manufacture comprising a substrate rendered catalytic according to the method of claim 57, having a metal coating over portions of said substrate in a selected pattern and being bonded to said substrate through an intermediate layer of catalyzed ligating chemical agent.

Claims 65 through 80. (Canceled).

81. (Previously presented) A method of rendering a substrate catalytic to electroless metal deposition comprising the steps of: (a) depositing a ligating chemical agent on said substrate, which is capable of both binding to said substrate and ligating to an electroless plating catalyst; and (b) ligating said electroless plating catalyst to said ligating chemical agent,

wherein said ligating chemical agent has the chemical structure:



82. (Previously presented) The method of claim 81, further comprising, after step (a), the step of contacting said substrate with a chemical reagent capable of reacting with at least one functional group of said ligating chemical agent.

83. (Previously presented) The method of claim 81, wherein said substrate is selected from the group consisting of: silicon oxide, titanium oxide, zirconium oxide, indium tin oxide, indium zinc oxide, tin oxide, zinc oxide, copper oxide, aluminum oxide, nickel oxide, and combinations thereof.

84. (Previously presented) The method of claim 81, wherein said substrate comprises a polymer with surface hydroxyl groups.

85. (Previously presented) The method of claim 81, wherein said electroless plating catalyst is a palladium catalyst.

86. (Previously presented) The method of claim 81, wherein said electroless plating catalyst is a palladium-tin colloid.

87. (Previously presented) The method of claim 81, wherein said electroless plating catalyst is selected to deposit metals from the group consisting of: cobalt, nickel, copper, gold, platinum, palladium, silver, and alloys thereof.

88. (Previously presented) An article of manufacture comprising a substrate rendered catalytic according to the method of claim 81, having a metal coating over portions of said substrate in a selected pattern and being bonded to said substrate through an intermediate layer of catalyzed ligating chemical agent.

Claims 89 through 94. (Canceled).